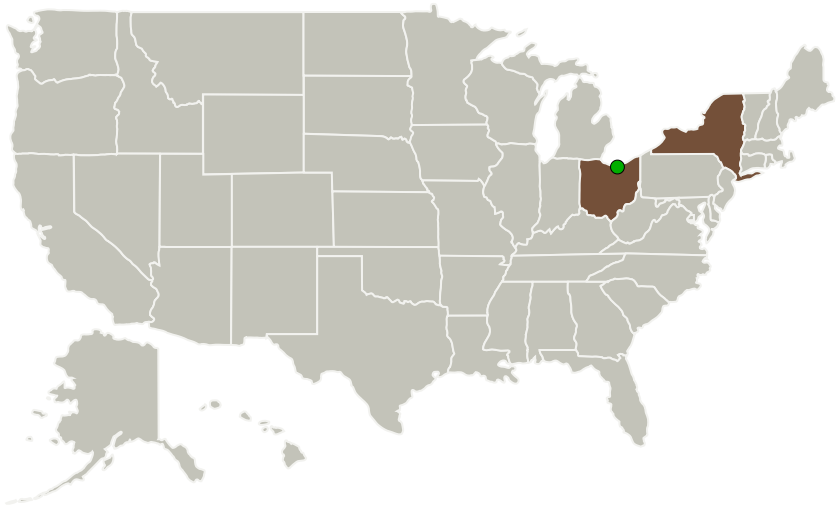
High Energy Density Lithium Air Batteries for Oxygen Concentrators, Phase I

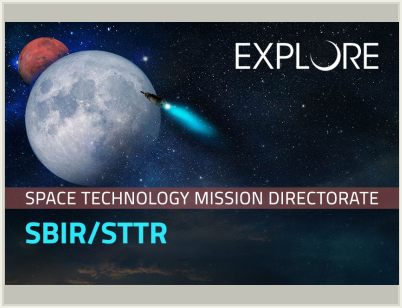
Completed Technology Project (2011 - 2011)

Project Introduction

For NASA's Exploration Medical Capabilities mission, extremely high specific energy power sources, with specific energy over 2000 Wh/kg, are urgently sought after. Such battery can be used to power the mobile oxygen concentrators. Current primary lithium batteries, such as Li/SO2 system, Li/CFx system, and fuel cells, have limited specific energy to around 500 Wh/kg. Lithium air cell has over 11500 Wh/kg theoretical specific energy, so it holds the great potential to realize such challenging goals. However, the state-of-the-art lithium air battery development has encountered several technical difficulties, including air cathode performance, air management and cell packaging prevent Driven by the strong market pull for this technology, Bettergy has conducted preliminary investigation into solutions to those problems. Based on our extensive experience in the field of metal air technology, we have come up with several innovative solutions. Initial results are very promising. With the support of this SBIR program, we will further implement and test our unique concepts in order to realize the full potential of the lithium air system.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Bettergy Corporation	Lead Organization	Industry	Peekskill, New York
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
New York	Ohio

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138197)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Bettergy Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

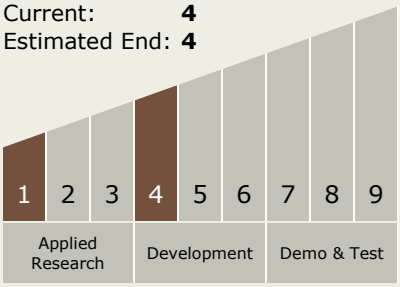
Carlos Torrez

Principal Investigator:

Lin-feng Li

Technology Maturity (TRL)

Start: **1**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System